



October 1998 Quarterly Report



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EXECUTIVE SUMMARY

The Department of Information Technology (DOIT) reports quarterly the status of California's efforts to find and fix problems associated with the Year 2000 to the Administration and the Legislature. At the end of the third quarter of the calendar year 1998, with only five quarters remaining until the Year 2000, the state's remediation status is as follows:

- Progress continues to be made. Fifty-one percent of the state's mission critical information technology (IT) systems have either been remediated or require no remediation effort, according to the state agencies responsible for these systems. State entities have completed 50 percent of the mission critical projects that address remediation of these systems.
- Despite the best efforts of the state's IT organizations, some mission critical systems will not be remediated by the December 1998 deadline set forth in the Governor's Executive Order W-163-97. Current information indicates that none of these systems is in danger of failing prior to its revised completion date. In fact, most of the state's mission critical systems, if not remediated, will not fail until 2000 or later.
- The DOIT continues to remind state entities of their responsibility to exercise due diligence in remediating the systems for which they are responsible, and that they are responsible for assuring that testing disciplines are not shortchanged in an effort to meet aggressive completion schedules.
- Depending upon the risk to the state, the DOIT will take additional actions to assist state entities in evaluating the causes of missed deadlines and determining what must be done to ensure that rescheduled completion schedules are met.
- The DOIT anticipates that the total statewide estimated Year 2000 remediation cost of \$290 million, a \$51 million increase over the amount reported in July, will continue to rise. The current estimate represents approximately \$239 million in IT remediation costs, \$7.5 million in embedded systems remediation costs and \$43.9 million in desktop systems remediation costs. Because state entities are still in the process of evaluating their embedded system and desktop system exposures, the DOIT anticipates that estimated costs for remediation of these systems will increase, possibly significantly.
- The DOIT has received one request for allocation of funds from the State Budget Year 2000 Fund. The 1998-1999 Budget Act appropriated \$20 million earmarked for Year 2000 remediation of mission critical IT systems, associated desktop systems and embedded systems critical to the health and public safety of California's citizens, the environment, the state's revenue streams and administration of its programs. The DOIT has received numerous inquiries about the fund and anticipates additional requests. Should the current allocation prove inadequate, the Director of Finance has authority to authorize expenditures in excess of the amount initially appropriated.

- State entities are currently beginning the process of evaluating the potential Year 2000 impact of thousands of embedded systems within California government that control building access and security systems, manage facility and office systems, deliver telecommunications, water and power services and support state programs in a myriad of ways.
- Quantification of the risks and associated costs related to embedded systems will evolve over time because the industry best practices employed by the state for remediating embedded systems are iterative and dictate that the highest risk embedded systems undergo the remediation process first. The DOIT continues to emphasize that state entities should follow the methodology assiduously; industry experience has demonstrated that elimination or abridgement of the preliminary phases ultimately lengthens the process.
- The DOIT has established the California Embedded Systems Center (CESC), an electronic clearinghouse facility where Year 2000 compliance information regarding specific embedded devices may be obtained. The CESC is available to all government organizations within California, including state entities, counties and municipalities.
- Preparation for the possibility of failures is essential because the actual impact of the Year 2000 will be unknown until the failure date has passed, and the potential impact of failures to California can be extremely broad, conceivably affecting all sectors – public, private and governmental.
- Responsibility for contingency planning and business resumption can cross multiple organizations, jurisdictions and functional units. To completely address the risks and plan for contingencies, these entities must formulate plans that are commensurate with their area of responsibility. Because the impact could be statewide, geographically localized or limited to a particular state entity or program, plans may need to be coordinated across many government and private sector functions and jurisdictions.

California has made substantial progress, particularly in the remediation of its IT systems; however, much of the work remains to be done. Problems, especially with embedded systems, have yet to be identified. Despite the most conscientious efforts of the state's staff, the efficacy of the remediation effort will not be known until after failure dates have passed. Year 2000 remediation must continue to be at the forefront of the DOIT's and the state's concerns for the balance of the century.

DOCUMENT OVERVIEW

The Department of Information Technology (DOIT) requires state entities under its purview – agencies, departments, boards and commissions – to report the status of their Year 2000 remediation efforts on a monthly basis. The DOIT, in turn, reports the statewide Year 2000 status to the Administration, the Legislature, and agency secretaries. The contents of this document are based on information reported to the DOIT during the third quarter of 1998. The focus of this Quarterly Report is on mission critical systems; however, the DOIT actively tracks and reports the remediation progress of non-mission critical systems as well.

The first section of this document, Statewide Costs and Status, summarizes the statewide Year 2000 status provided to the DOIT by state entities on or before September 30, 1998 and includes data related to information technology (IT) systems as well as embedded and desktop systems.

The second section, The California Year 2000 Programs, describes the current status and recent enhancements to the various programs that the DOIT has initiated to foster California's success in managing the Year 2000 problem, including:

- IT Program
- Embedded Systems Program
- Desktop Systems Program
- Outreach Program
- Legal Program

The DOIT continues to take important actions in each of these program areas, both to increase the state's ability to assess its Year 2000 risks and status and also to provide new sources of information and guidance to state entities engaged in Year 2000 remediation.

The third section, Additional Year 2000 Challenges to California, presents a number of issues that the State of California must address in order to mitigate the risks posed by the century change.

The last section, Appendices, contains the detailed data on which the observations and conclusions contained in this document are based. The following reports are included in this section:

- Appendix A: State Entities Reporting Year 2000 IT Remediation Projects in September
- Appendix B: State Entities Reporting No Further Year 2000 Remediation of IT Systems Required

- Appendix C: Status of IT Mission Critical Systems Requiring Remediation
- Appendix D: Mission Critical Systems Scheduled for Completion after January 10, 1999
- Appendix E: Additional Statewide Year 2000 IT Statistics
- Appendix F: Agency and Department Mission Critical IT Project Milestones Summary
- Appendix G: Agency and Department Embedded Systems Identified in Site Survey
- Appendix H: Year 2000 Policy Memoranda Published in Third Quarter 1998
- Appendix I: The DOIT Year 2000 Seminar and Conference Participation
- Appendix J: Year 2000 Documents Published by the DOIT
- Appendix K: Full Size Versions of Quarterly Report Graphs

STATEWIDE COSTS AND STATUS

State entities under the DOIT's purview are required to report estimated remediation costs and updated project schedules monthly. The DOIT expects the data to arrive on or before the last working day of the month in which it is due. The data used to produce this report was received by the DOIT on or before September 30, 1998. The information contained in this report is, therefore, a reflection of the state's overall status at the end of September 1998. Because many state entities require an internal review of information before it is reported to a control agency, the data cannot be presumed to represent an absolutely current snapshot of California's Year 2000 status. Nevertheless, the DOIT believes that analysis of the data available leads to valid observations and reasonable conclusions.

Summary of Cost Estimates

- **The DOIT anticipates that the total statewide estimated cost of \$290 million, a \$51 million increase over the amount reported in July, will continue to rise.**

The current estimate represents approximately \$239 million in IT remediation costs, \$7.5 million in embedded systems remediation costs and \$43.9 million in desktop systems remediation costs. Because state entities are still in the process of evaluating their embedded systems and desktop systems exposures, the DOIT anticipates that estimated costs for remediation of these systems will increase, possibly significantly. Estimated IT remediation costs have remained stable since April 1998; however, these costs may also increase as state entities complete remediation of their mission critical systems and turn their attention to non-mission critical systems, and as remediation consultants continue to increase their hourly rates.

Figure 1: Statewide Year 2000 Estimated Expenditures below illustrates the current estimated relative cost of each system category.

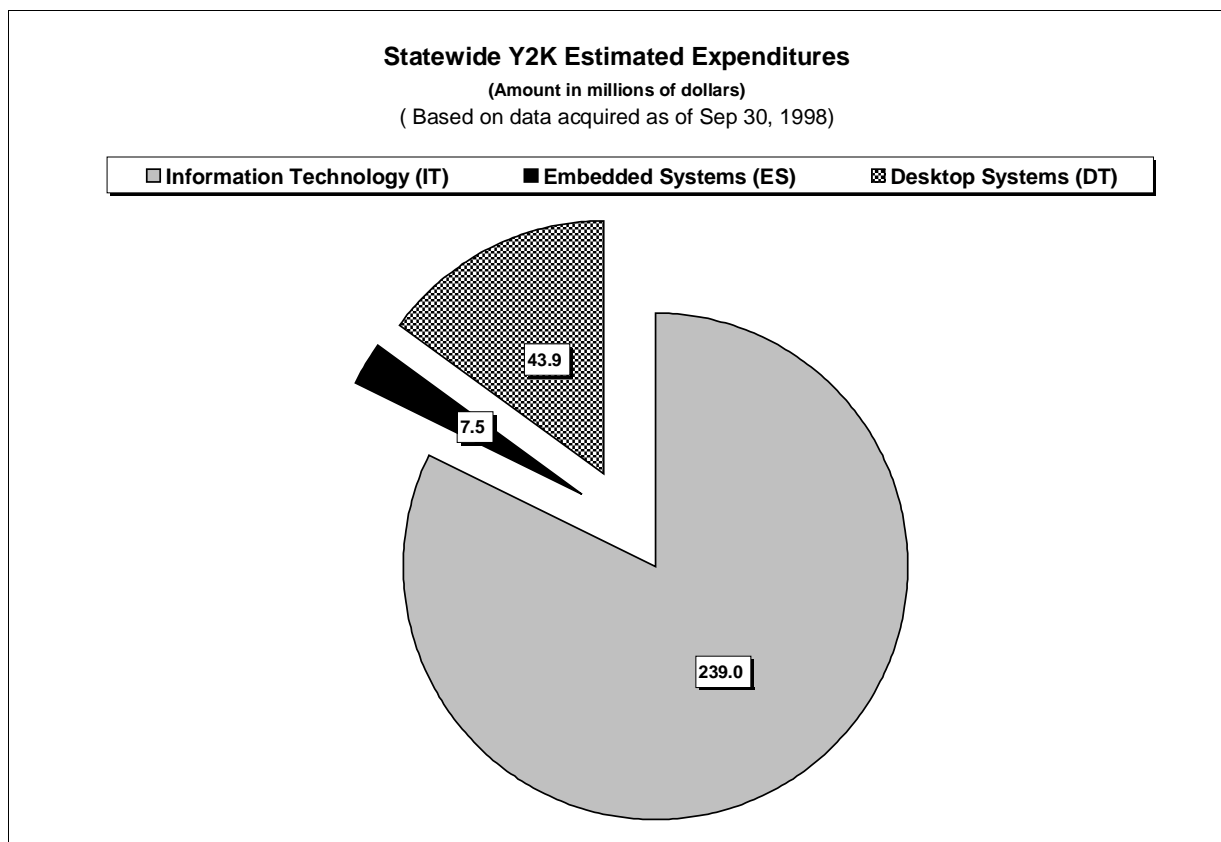


Figure 1: Statewide Year 2000 Estimated Expenditures
(A full sized copy of this figure is contained in Appendix K)

Cost Summary by Fiscal Year

Table 1: Estimated California Year 2000 Remediation Costs by Fiscal Year below summarizes the statewide remediation costs captured as of September 30, 1998. The table presents the estimated remediation costs for each fiscal year beginning with fiscal year 1996-97 and continuing through fiscal year 1999-2000. Estimated costs accrued prior to fiscal year 1996-97 are presented as a single set of totals on the first line of the table.

Estimated California Year 2000 Remediation Costs by Fiscal Year As of September 30, 1998 <i>(Dollars rounded to nearest thousands)</i>				
Fiscal Year	Estimated IT Systems Costs	Estimated Embedded Systems Costs	Estimated Desktop Systems Costs	Total
Prior to FY 1996-1997	\$18,424			\$18,424
FY 1996-1997	\$14,180			\$14,180
FY 1997-1998	\$108,209			\$108,209
FY 1998-1999	\$78,999	\$5,439	\$26,393	\$110,831
FY 1999-2000	\$18,837	\$2,018	\$17,497	\$38,352
Sub-Total	\$224,468	\$7,457	\$43,890	\$275,815
Other Estimated Costs¹				\$14,516
TOTAL				\$290,331

Table 1: Estimated California Year 2000 Remediation Costs by Fiscal Year

¹ The DOIT began asking state entities to report their Year 2000 fiscal year costs in June 1997 when they first submitted their remediation plans. State entities that had previously submitted a total estimated Year 2000 remediation cost but had already completed their remediation activities were not required to distribute their Year 2000 costs across fiscal years or budgeting categories. Therefore, dollars presented in the row labeled "Other Estimated Costs" reflect entities already completed; thus, these costs should be considered dollars that will have no future impact because they have already been spent and the associated systems are remediated.

1998-1999 Budget Act: Year 2000 Appropriation

- **The 1998-1999 Budget Act appropriated \$20 million in additional funds for Year 2000 remediation efforts.**

Items 9904-001-0001, 9904-001-0494 and 9904-001-0988 of the Budget Act appropriate \$20 million to be used exclusively for Year 2000 remediation of mission critical IT systems, their associated desktop systems, and embedded systems critical to the health and public safety of California's citizens, the environment, the state's revenue streams and administration of its programs. The DOIT reviews and approves requests for Year 2000 funding.

The appropriation is comprised of \$10 million from the General Fund, \$8 million from Special Funds (spending authority) and \$2 million Non-Governmental Cost Funds. The Act empowers the Director of Finance to authorize expenditures in excess of the amount initially appropriated to each fund.

Eligible state entities² must apply to the DOIT for funds to be used only for activities necessary and sufficient to bring their systems into Year 2000 compliance.³ Funding for hardware and software must be limited to components necessary to bring mission critical IT systems and their associated desktops into Year 2000 compliance. Wholesale replacement of IT and desktop systems, even if specifically undertaken for century change correction, requires the DOIT's and the Department of Finance's (DOF's) approval through the standard Feasibility Study Report (FSR) process prior to validation of a request for funds from the \$20 million appropriation.

The DOIT, with DOF concurrence, has prepared a procedure for departments to follow to request funds from these appropriations. The DOIT conducted two orientation sessions for Project Managers and departmental budget analysts in early October, with 25 departments and 60 staff attending. One official request for funds has been received to date; however, a number of state entities have made inquiries to the DOIT staff supporting the Funding Request function.

² The University of California, the California State University, the State Compensation Insurance Fund, the community college districts, agencies provided for by Article VI of the California Constitution, and the Legislature are ineligible to receive allocations from this appropriation.

³ Additionally, State entities may request funding for procurement of software tools to determine desktop Year 2000 compliance.

Summary of IT Project and System Remediation Status

➤ In the IT arena, the state has made measurable progress.

In the third quarter of 1998, state entities completed an additional seventeen percent of all planned IT remediation projects. They completed 26 percent of all planned projects designated as mission critical.

CALIFORNIA IT PROJECT REMEDIATION STATUS

Table 2: California IT Projects Status below shows the remediation status of all projects, as well as the subset of projects deemed mission critical by state entities. The data reported as of June 30, 1998 is shown in parentheses. The DOIT attributes the decrease in the total number of projects to the consolidation of remediation plans into well-defined units of work (projects).

California IT Projects Status As of September 30, 1998 (Data below in parentheses is as of June 30, 1998)		
	All Projects	Mission-Critical IT Projects
Total Projects	1,360 (1,435)	564 (650)
Total Projects in Progress	666	272
Total Projects with Start Dates in the Future⁴	96	12
Total Completed to date	598 = 44% (385 = 27%)	280 = 50% (157 = 24%)

Table 2: California IT Projects Status

⁴ Not every project will be active at any given time. The projects in the category "Total Projects with Start Dates in the Future" are projects that the responsible state entity plans to start some time in the future. In creating their Year 2000 remediation plans, state entities must consider a number of factors including: resource deployment, interdependencies within and across the systems being remediated and vendor software availability. Provided that a project starts in time for the system to be remediated prior to the critical failure date, a future project start date is not, in and of itself, cause for concern.

Figure 2: Statewide Report Totals; Mission Critical IT Project Milestones illustrates the state's planned versus actual IT progress across the Year 2000 methodology's high level milestones. Similar charts for each state entity and agency are contained in Appendix F: Agency and Department Mission Critical It Project Milestones Summary.

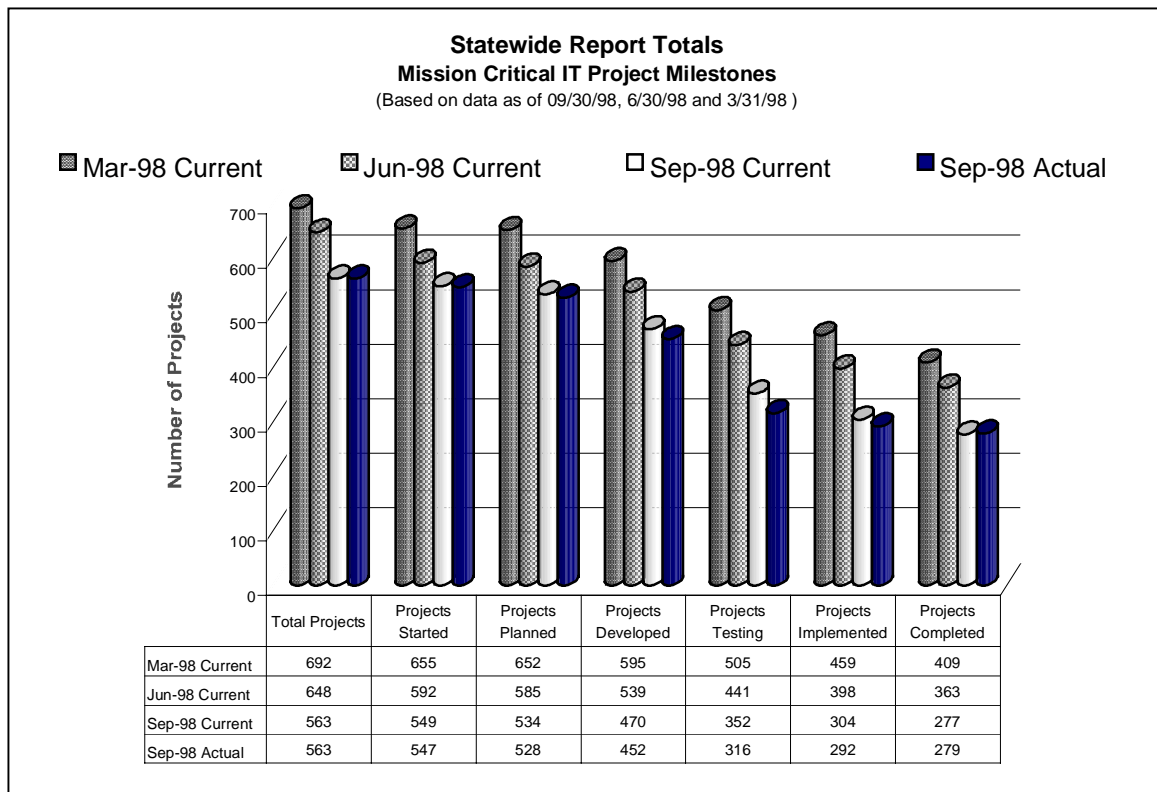


Figure 2: Statewide Report Totals; Mission Critical IT Project Milestones
 (A full sized copy of this figure is contained in Appendix K)

CALIFORNIA IT SYSTEM REMEDIATION STATUS

The number of systems remediated has increased as well. The overall completion percentage for IT systems has grown to 43 percent; the completion percentage for mission critical systems has reached 41 percent. *Table 3: California IT Systems Status* below shows the remediation status of all systems, as well as the subset of mission critical systems, as of September 30, 1998. The data reported in the *July 1998 Quarterly Report* is shown in parentheses. The DOIT attributes the reduction in the number of systems and of mission critical systems to consolidation of subsystems into single systems for reporting purposes, removal of desktop and embedded systems from the IT database and elimination of redundant systems erroneously reported previously.

California IT Systems Status As of September 30, 1998 (Data below in parentheses is as of June 30, 1998)		
	All Systems Including Mission Critical	Mission Critical IT Systems
Total Systems	2,417 (2,432)	640 (642)
Total requiring Year 2000 Remediation	1,272 (1,312)	532 (555)
Total remediated to date	542 = 43% (365 = 28%)	220 = 41% (128 = 20%)

Table 3: California IT Systems Status

More detailed statewide summary data for systems is contained in Appendix E: Additional Statewide Year 2000 IT Statistics.

- **State entities continue to pursue aggressive IT project schedules that call for complete remediation of most mission critical systems by the end of 1998.**

While progress has been made, much of the work remains to be done. Another 730 systems, 312 of them mission critical, remain to be completed. *Figure 3: Mission Critical Systems; Planned / Actual Remediation by Month* compares the planned number of remediated systems by month as reported by state entities March 31, 1998, June 30, 1998 and September 30, 1998 to the actual number of mission critical systems remediated as reported by state entities as of September 30, 1998. The chart shows that more systems are now planned to be completed in the fourth quarter of 1998 than were anticipated when state entities reported to the DOIT at the end of March and June 1998.

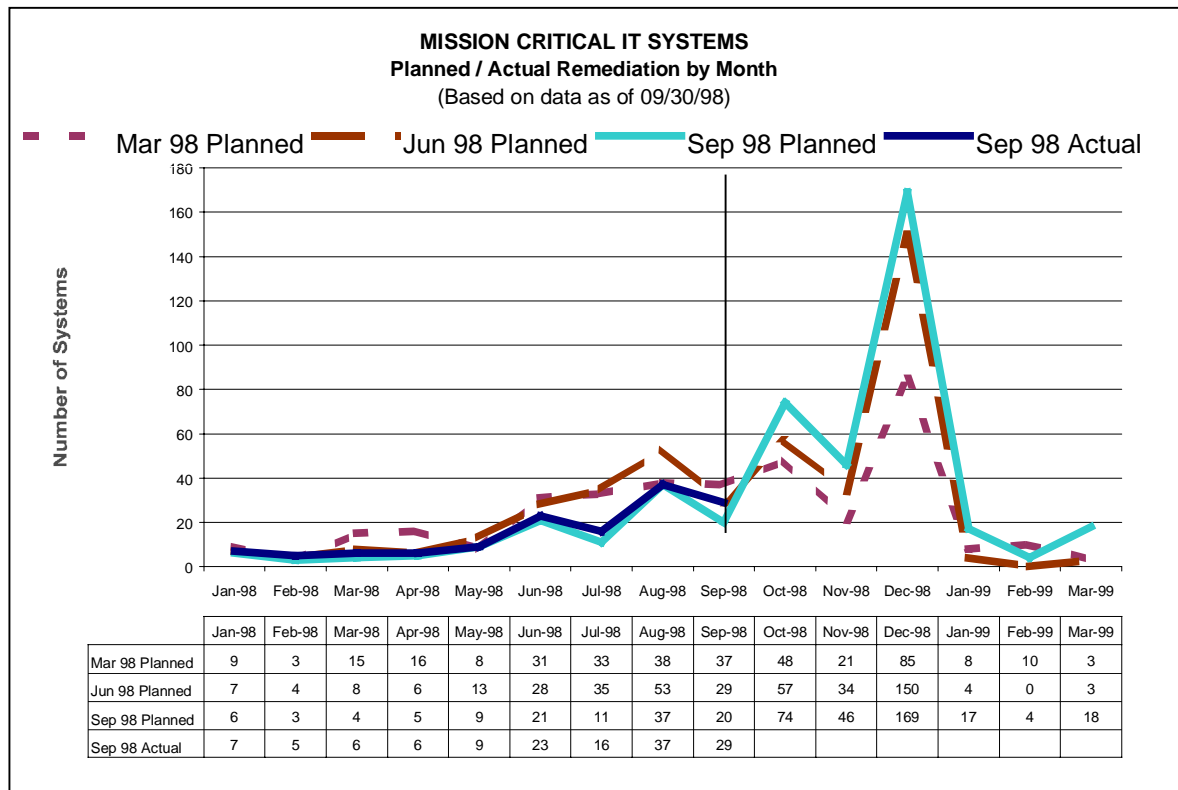


Figure 3: Mission Critical Systems Planned / Actual Remediation by Month
(A full sized copy of this figure is contained in Appendix K)

Examination of the completion status of mission critical projects leads to a similar conclusion. Another 792 projects, 284 of them mission critical, remain to be completed. *Figure 4: Mission Critical Projects; Planned / Actual Completion by Month* compares the planned number of remediation projects by month as reported by state entities March 31, 1998, June 30, 1998 and September 30, 1998 to the actual number of mission critical projects completed each month as reported by state entities as of September 30, 1998. The chart shows that more projects are now planned to be completed in the fourth quarter of 1998 than was anticipated when state entities reported to the DOIT at the end of June 1998.

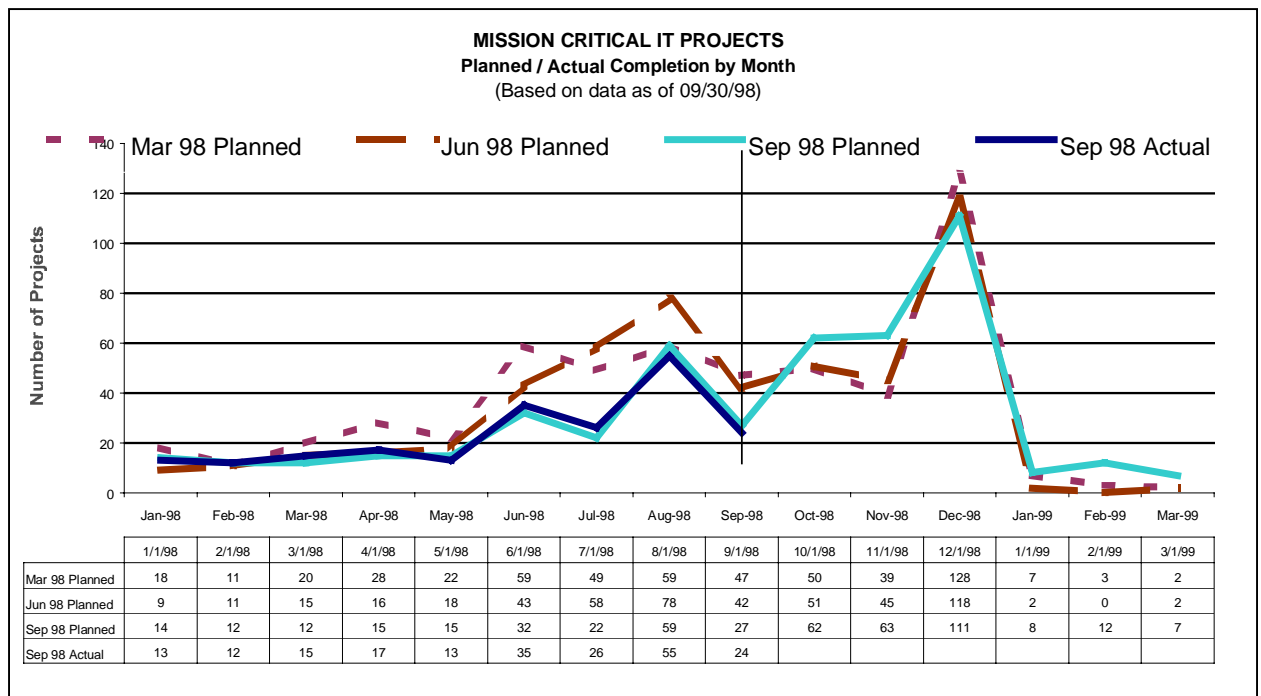


Figure 4: Mission Critical Projects; Planned / Actual Completion by Month
(A full sized copy of this figure is contained in Appendix K)

- **Work initially planned to be completed in the third quarter of 1998 is now scheduled to be completed in the fourth quarter and, in some cases, has slipped into 1999.**

Fewer mission critical systems were actually completed in the third quarter than was anticipated by state entities when they reported at the end of June 1998, and fewer mission critical projects were completed in the third quarter than was anticipated by state entities when they reported at the end of June 1998. *Table 4: Comparison of Planned versus Actual Total Mission Critical Systems Remediated by Quarter* below illustrates how state entities have successively moved anticipated system completions into subsequent quarters over the past nine months. *Table 5: Comparison of Planned versus Actual Total Projects Completed by Quarter* below illustrates similar data for projects.

Comparison of California IT Mission Critical Systems Remediation Planned versus Actual by Quarter As of September 30, 1998				
	Total Systems to be Remediated in Q2 1998	Total Systems to be Remediated in Q3 1998	Total Systems to be Remediated in Q4 1998	Total Systems to be Remediated in Q1 1999
Planned as of March 31, 1998	55	108	154	21
Planned as of June 30, 1998	47	117	241	7
Planned as of September 30, 1998	35	68	289	39
Actual as of September 30, 1998	38	82		

Table 4: Comparison of Planned versus Actual Total Mission Critical Systems Remediated by Quarter

Comparison of California IT Project Completions Planned versus Actual by Quarter As of September 30, 1998				
	Total Projects to be Remediated in Q2 1998	Total Projects to be Remediated in Q3 1998	Total Projects to be Remediated in Q4 1998	Total Projects to be Remediated in Q1 1999
Planned as of March 31, 1998	109	155	217	12
Planned as of June 30, 1998	77	178	214	4
Planned as of September 30, 1998	62	108	236	27
Actual as of September 30, 1998	65	105		

Table 5: Comparison of Planned versus Actual Total Systems Remediated by Quarter

- **While completion dates remain static, planned major milestones continue to move further into the future.**

The following figures reflect that, in many cases, state entities have been unable to meet their forecast milestones. *Figure 5: Mission Critical Systems; Planned / Actual Development and Modification Milestones by Month* and *Figure 6: Mission Critical Systems; Planned / Actual Testing Milestones by Month* each illustrate a similar conclusion: at the end of June, work that was anticipated to complete in September is now planned to be completed a month later, and, since in many cases the planned completion date has not changed, this implies that more work must now be completed in the balance of 1998 than was anticipated at the end of the second quarter.

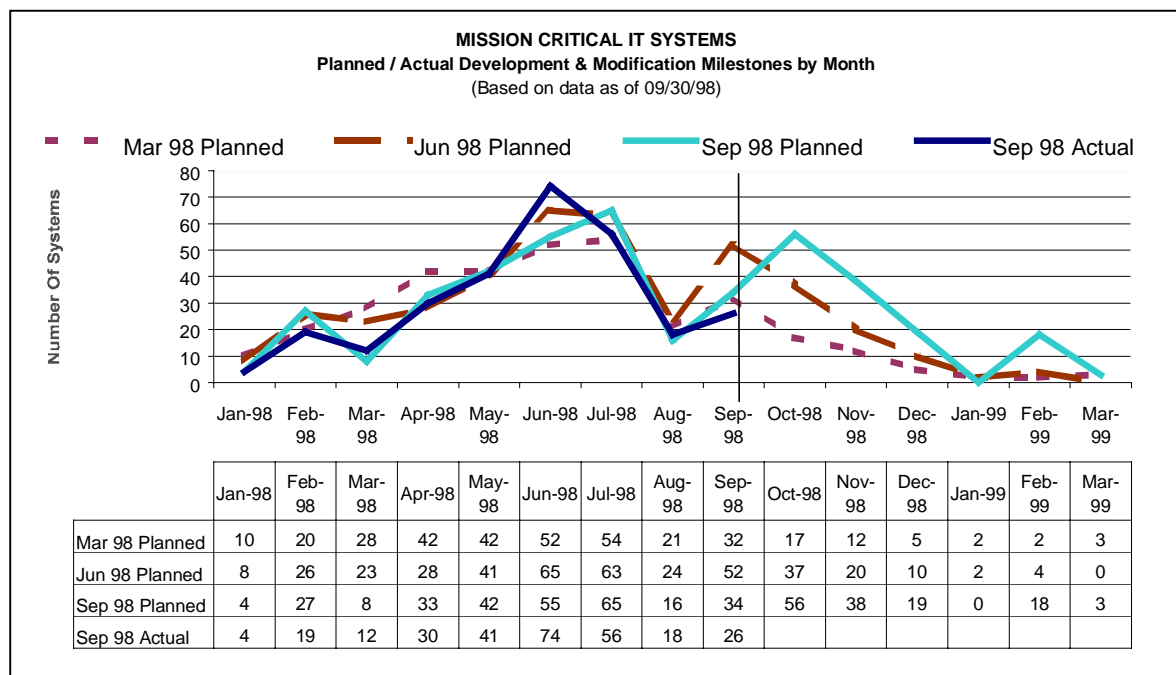


Figure 5: Mission Critical Systems; Planned / Actual Development and Modification Milestones by Month

(A full sized copy of this figure is contained in Appendix K)

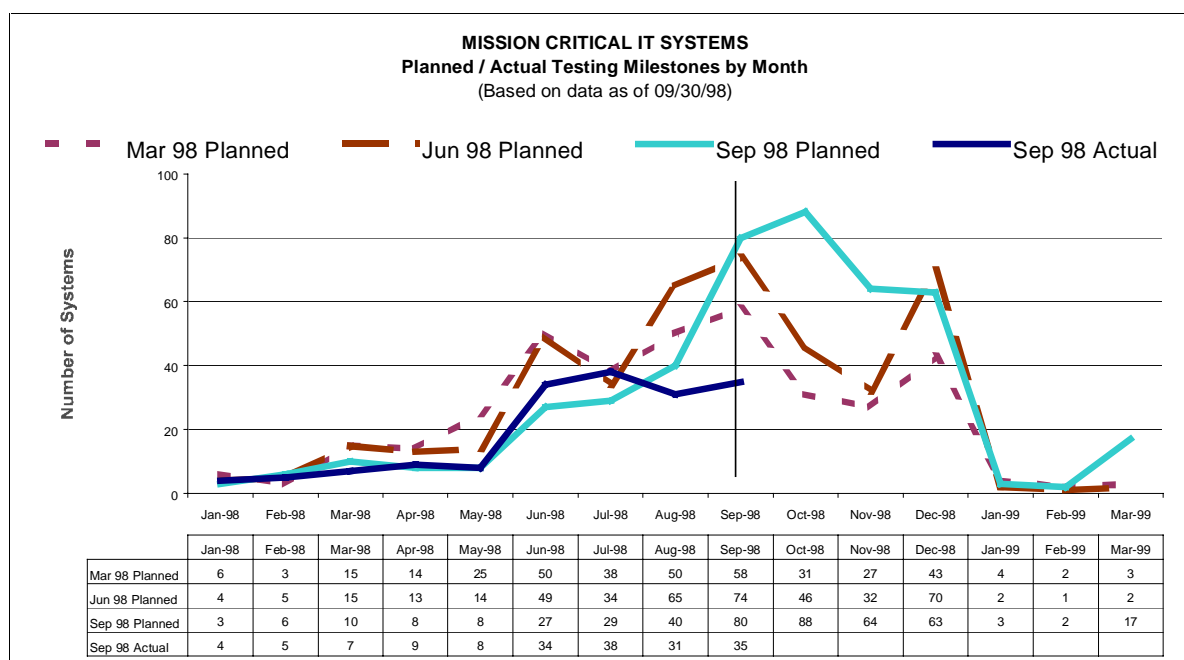


Figure 6: Mission Critical Systems; Planned / Actual Testing Milestones by Month
 (A full sized copy of this figure is contained in Appendix K)

Because the time needed to complete a unit of work – such as development and modification, and testing – is a function of the number of hours it takes to finish the unit of work and the number of resources performing it, state entities must do one or more of the following to meet their scheduled completion dates:

- Assign additional resources;⁵
- Become more efficient so that tasks take less time to perform;
- Reduce the total amount of work by eliminating or shortchanging some tasks.

The DOIT's concern is that, as the end of the year draws near, state entities that have underestimated their resource needs or have been unable to increase their efficiency will begin to eliminate or shortchange tasks – particularly testing – possibly leading to premature implementation of incompletely remediated and/or tested IT systems.

⁵ If a task requires a hundred hours to complete, then one person can finish the task in 100 hours but two people may be able to finish it in 50 hours.

- **The DOIT continues to remind state entities of the necessity for meticulous testing and of their responsibility to exercise due diligence in remediating their systems.**

The conclusion that a system is Year 2000 compliant and that adequate testing has been performed must be based on technical and business factors that are distinct to a given system. Specific criteria must be determined by state entities on a case-by-case basis; however, the DOIT has provided state entities with the following general guidelines, published in a memorandum⁶ on October 20, 1998, for documenting evidence of compliance:

REQUIREMENTS RELATED TO MISSION CRITICAL IT SYSTEMS

A state entity may legitimately claim that it has completed remediation of an IT system if it can demonstrate that it has taken prudent and appropriate Year 2000 remediation steps that satisfy the following criteria:

1. The IT system is Year 2000 compliant to the best of the department's knowledge:
 - a) All components of the IT system whose Year 2000-related problems would impact essential business functions if not repaired have been fixed or replaced and no essential business function will be impaired in the current or next century due to incorrect manipulation of dates or ambiguous interpretation of the century they represent, by those components.
2. The Year 2000 compliant version of the IT system is "in production":
 - a) All repaired or replaced components that impact business functions currently operate in the same IT environment that supports the affiliated department's programs and day-to-day business operations;
 - b) No additional Year 2000-related upgrades or enhancements to specific hardware, software or micro code of the computers on which the IT system is dependent are planned or required.
3. The department is able to demonstrate that due diligence was exercised in ascertaining that the IT system is Year 2000 compliant:
 - a) The IT organization and its business partners have jointly evaluated testing strategies for the system in light of business risk and have developed test plans commensurate with that risk⁷. Such plans must address any and all obligatory

⁶ Appendix H: Year 2000 Policy Memoranda Published in Third Quarter 1998, contains a copy of the memorandum.

⁷ The California Year 2000 Testing White Paper, published by the DOIT in July 1998, provides guidance in determining testing strategies and developing test plans.

testing requirements dictated by the selected test strategy⁸.

- b) All repaired or replaced components of the IT system that impact business functions have been tested successfully in both twentieth and twenty-first century environments (current and future century testing).
 - c) The IT system has satisfied any and all quality assurance or Year 2000 validation requirements imposed by state or federal statute, policy or the department's own regulations.
4. The IT system has been protected from corruption by systems with which it exchanges date data electronically (external interface), whether or not the partner system is itself Year 2000 compliant.
- a) Exchange protocols that define date formats, test data requirements and testing and implementation schedules have been established and formally documented.
 - b) Reasonable efforts have been made to publish or otherwise inform external suppliers and recipients of the system's date-related data as to the nature and content of the associated exchange protocols;
 - c) Insofar as is possible, by means of its own testing processes, the department has verified that the system's Year 2000 remediated external interfaces function properly; and
 - d) The necessary processes - manual, automated or both – have been put into practice to preclude corruption of the IT system by external sources.

➤ **The DOIT may take additional steps in the future to evaluate the criteria used in determining remediation completion, as well as the standards applied in determining that a given system requires no Year 2000 remediation.**

Possible avenues of evaluation may include:

- Post implementation project reviews;
- Independent assessment by an IV&V vendor.

⁸ For example, if the system's test strategy requires testing of all external interfaces or testing in a stand-alone environment where the hardware clock has been changed to a date other than the current date (time machine testing), then the test plan must contain tasks to perform these tests.

- **If not remediated, most mission critical systems will not fail until 2000 or later.**

The Governor's Executive Order (W-163-97) affords a measure of Year 2000 security to California. While the Executive Order instructs state entities to complete remediation of their mission critical systems by December 31, 1998, most mission critical systems, if not remediated, will not fail until 2000 or beyond. This time between the planned implementation date and the required implementation date provides a built-in buffer for many projects.

ADDITIONAL IT STATUS INFORMATION

Additional information about the status of IT systems may be found in the following appendices:

- Appendix C: Status of IT Mission Critical Systems Requiring Remediation
- Appendix D: Mission Critical Systems Scheduled for Completion after January 10, 1999
- Appendix E: Additional Statewide Year 2000 IT Statistics
- Appendix F: Agency and Department Mission Critical IT Project Milestones Summary

California Embedded System Remediation Status

- **Most state entities are in the early stages of embedded systems remediation.**

As of the end of September 1998, 99 state entities have reported the status of the embedded systems remediation efforts. While some state entities have made progress, many others are in the initial phases of:

- Determining the potential risks posed to citizen health and safety, the environment, program operation, public confidence and various other risks;
- Surveying physical sites to capture vendor name, model and serial number information for many embedded systems and devices that may be affected by the Year 2000.

These preliminary phases of the methodology are essential to a successful outcome because they provide a prioritized, organized framework for the subsequent labor of obtaining compliance information from vendors, as well as the actual remediation and testing of embedded systems. However, as the initial phases are relatively lengthy, substantial time may elapse between the initiation of a state entity's embedded systems remediation project and completion of assessment of Year 2000 impact to those systems.

Figure 7: Statewide Totals; Number of Embedded Systems Identified in Site Survey below illustrates the number of embedded systems identified to date by risk category.

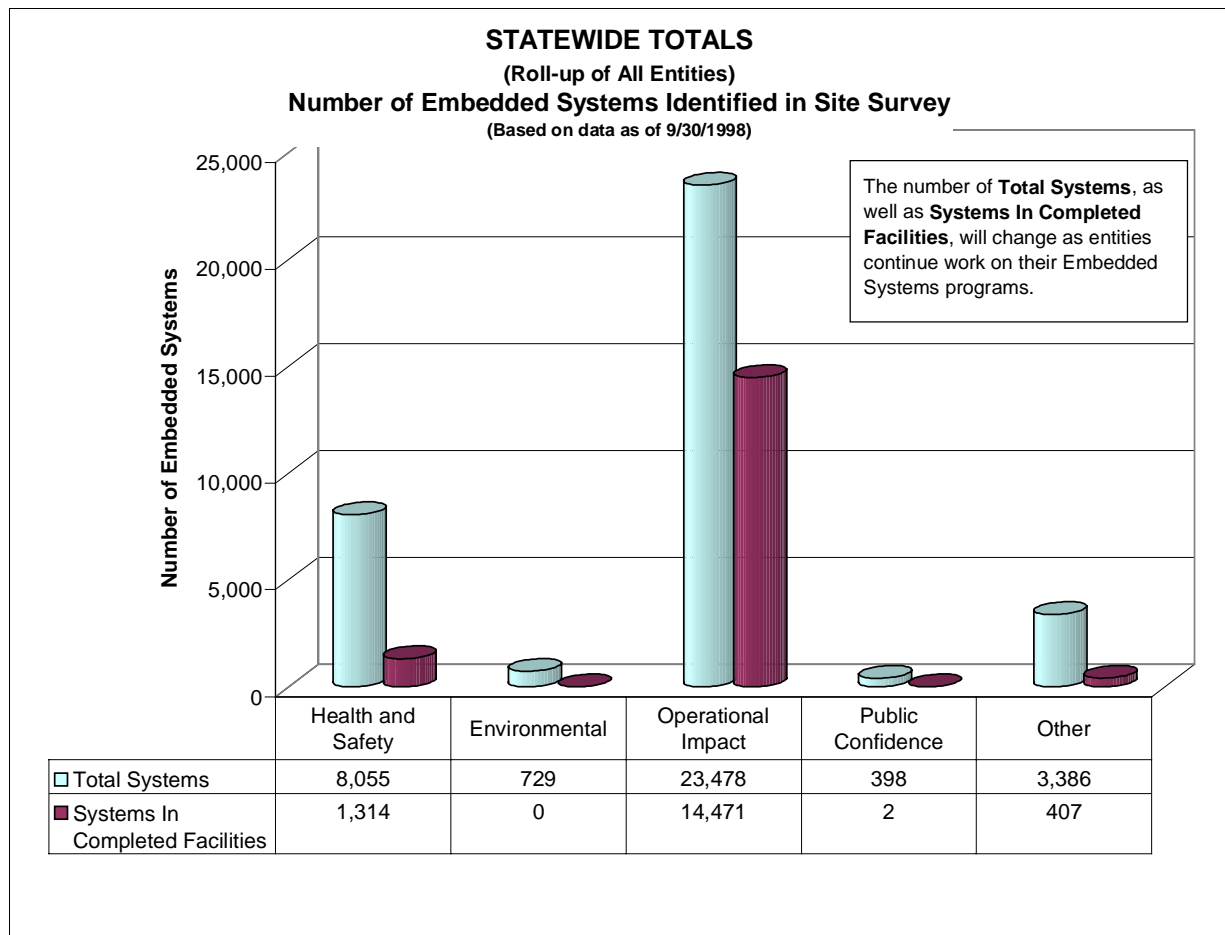


Figure 7: Statewide Totals; Number of Embedded Systems Identified in Site Survey

The cylindrical towers labeled “Total Systems” represent the total number of embedded systems that pose a potential risk in each category. For example, to date state entities have identified 8,055 embedded systems whose failure could pose a risk to citizen health and safety.

The cylindrical towers labeled “Systems In Completed Facilities” represent the total number of embedded systems in facilities where there are no more embedded systems impacted by the Year 2000. There are 1,314 embedded systems whose failure could pose a risk to citizen health and safety, that reside in facilities where the embedded systems have been remediated or determined to require no remediation. Since no further remediation is required at the associated sites, it is valid to assume that the state entity responsible for these 1,314 embedded systems has taken the necessary steps to ensure that they are compliant or that they no longer pose a risk to health and safety.

Beginning with the November 1998 reporting period, state entities will be asked to provide more detailed information regarding their embedded systems remediation efforts. The DOIT

anticipates that this additional data will provide a more granular picture of California's embedded systems risks and status.

California Desktop System Remediation Status

- **Most state entities are in the early stages of evaluating their desktop systems remediation requirements.**

As of the end of September 1998, 98 state entities have reported to the DOIT that they have taken steps to assess the Year 2000 exposure to their desktop systems. *Table 7: Total Desktop Systems Reported* summarizes the desktop system-related data received by the DOIT as of September 30, 1998.

Total Desktop Systems Reported	
Hardware	
Servers	2,929
Workstations	96,028
Total:	98,957
Application Software	
COTS ⁹	88,988
User-Developed Applications	4,336
Total:	93,324
Operating Systems	
Network Operating Systems	1,638
Operating Systems	28,536
Total:	30,174

Table 7: Total Desktop Systems Reported

Beginning with the December 1998 reporting period, state entities will be asked to provide more detailed information regarding their desktop systems remediation efforts. The DOIT anticipates that this additional data will provide a more granular picture of California's desktop systems risks and status.

⁹ Commercial Off-the-Shelf

CALIFORNIA YEAR 2000 PROGRAMS

Program Overview

California is a national leader in addressing the Year 2000 problem. The problem is not static; the public and private sectors, as well as society at large, continue to uncover new facets of the problem and invent new methods for tackling its unique challenges. Once commonly perceived to be only an IT problem, the millennium bug is now recognized as far more widespread and with a potentially far greater impact than originally projected. While the DOIT's Year 2000 programs have kept pace with these changing needs, the overall goals have remained constant:

- To provide leadership and guidance to state entities in all facets of their Year 2000 efforts; and
- To oversee and report the state's overall Year 2000 status.

Currently the California Year 2000 Project Office administers five distinct programs:

- IT Program;
- Embedded Systems Program;
- Desktop Systems Program;
- Outreach Program; and
- Legal Program.

The following pages describe recent enhancements to these programs.

IT PROGRAM

Initiated in the fall of 1996, the DOIT's IT program is now well established. While it initially focused on promoting awareness and adoption of a standard Year 2000 remediation methodology, the program now has two primary focuses:

- Oversight of IT remediation projects; and
- Facilitation of external interface management.

Oversight of IT Remediation Projects

The DOIT continues to actively monitor the State's Year 2000 remediation projects. The DOIT's primary oversight tool is the collection and evaluation of project and system status data reported monthly by state entities. This data is augmented and validated by the DOIT staff through direct contact with Year 2000 project managers. In addition, the DOIT conducts independent project reviews of projects deemed to be of special interest because their failure would pose a high risk to the state's mission critical systems.

PROJECT REVIEW OBSERVATIONS

The DOIT's project reviews continue to unearth common issues and concerns that are similar to those described in the July 1998 Quarterly Report, namely:

- The ability to retain key employees (subject matter experts) and recruit additional resources with appropriate skills has a direct bearing on the ability to meet project schedules;
- The pool of knowledgeable employees and contractors with the needed skills is small;
- Year 2000 remediation positions are limited term positions and are, therefore, less attractive to qualified state workers;
- Findings in the testing process may result in additional work or rework, leading to higher costs and more lengthy project schedules than originally estimated;
- Time and cost constraints have forced some remediation strategies to be modified;
- Some state entities have had to incur the hardware and software upgrade costs in addition to the costs associated with code remediation or replacement;
- Many systems are being put into production before full future century and time machine testing has been completed; and
- A number of state entities have had difficulty allocating resources to the tasks of identifying and remediating their embedded systems and desktop systems.

YEAR 2000 INDEPENDENT VERIFICATION AND VALIDATION (IV&V)

In recent months, the IT industry has begun to pay greater attention to the possibility of employing IV&V techniques to Year 2000 remediation projects. Unfortunately, the term “IV&V” does not have a universally understood connotation. Within state government, IV&V generally refers to a vendor-provided service that evaluates the health of a project and the probability of project success or failure. Within the context of Year 2000 remediation, IV&V generally refers to the use of an automated tool designed to determine whether all date references in a system have been found and fixed. The distinction is important. In the past month the DOIT has hired a consultant to provide Year 2000 IV&V services that meet the first definition of IV&V. However, at present a number of vendors are marketing IV&V services that assume the definition of remediated code verification and at least one state entity is embarking on a pilot evaluation of its remediated systems.

Facilitation of External Interface Management

The exchange of electronic date data across external interfaces – that is, interfaces among IT systems belonging to different state agencies, and among state agencies and other government and private sector organizations – has the potential to corrupt the very same systems that state entities are laboring to make Year 2000 compliant. Two circumstances make the management of external interface remediation particularly challenging:

- The state and the organizations with which it exchanges data have no simple way of uniquely designating an external interface, recognizing the names of each partner’s associated IT system (or systems) or identifying the responsible parties in each organization;
- Every organization exchanging data with the state has its own priorities, schedules and deadlines.

Key to resolving the special issues related to external interfaces is the ability of IT organizations to contact their data exchange partners, to agree upon date standards and negotiate mutually acceptable schedules. While it sounds simple, this task has often proven extremely difficult and frustrating. For example, consider external interface data exchanged through the medium of a magnetic tape. The tape moves from the sender’s computer room, to the sender’s mail room, to the receiver’s mail room and to the receiver’s computer room. This process may work very well as long as no changes are required to the format of data being exchanged. However, when a change is required, there must be a continuum of information that includes not only computer and mail rooms but also both the sender and receiver’s programming staff and their respective business partners. The premise that such a continuum naturally exists has proven to be false. Because of the age of most interfaces, sending and receiving programmers do not necessarily recognize the arbitrary names assigned to their partner’s IT systems; they may, in fact, not even know the name of their partner’s organizational unit or business function.

California and her sister states – and industry in general – continue to grapple with the problem described above. For example, many entities within California government, as well as other

states, have found it a challenge to respond to the federal government's request for updates to the National Association of Information Resource Executives (NASIRE) list of federal/state exchanges stored on the NASIRE web site. Respondents have not been consistently able to relate the Federal Government's system names or, in some cases even its departments, to their own systems and departments. The DOIT continues to work with state entities to resolve this particular problem.

In addition, because the DOIT foresees a similar problem between state entities and their data exchange partners in county and municipal government, the DOIT with concurrence from the Intergovernmental Task Force¹⁰ has completed enhancements to its own web-based repository of external interface contacts. The enhanced application will be rolled out in December 1998.

The DOIT has been frequently called upon to participate in the resolution of issues related to external interfaces that continue to arise between both the federal government and the state, and the state and counties. In conjunction with the Intergovernmental Task Force, the DOIT has developed important new policies that will facilitate coordination between state entities and the counties with whom they exchange electronic data. The DOIT has established:

- A policy that assigns de facto ownership of an interface to the senior partner in the hierarchy of federal, state and county governments;
- A standard format for dates exchanged over an external interface; and
- A testing policy that dictates schedules, deadlines and the responsibilities of both senders and receivers of data.¹¹

The DOIT and the Intergovernmental Task Force continue an ongoing dialog and partnership designed to foster mutual success in their Year 2000 efforts.

¹⁰ A group of chief information officers representing California state and local governments.

¹¹ These policies are documented in the [California 2000 External Interfaces White Paper](#).

EMBEDDED SYSTEMS PROGRAM

In the first full quarter of its deployment, the California 2000 Embedded Systems Program has produced a number of important deliverables including:

- Availability of the California Embedded Systems Center to all government entities within California;
- Completion of two embedded systems remediation pilot projects and preliminary assessment reports;
- Enhancements to the Embedded Systems Year 2000 methodology to assist state entities in the difficult tasks of risk assessment and testing of embedded systems compliance.

California Embedded Systems Center

In the course of remediating their embedded systems, state entities must evaluate the Year 2000 compliance of thousands of devices from hundreds of vendors and suppliers. Every device owned or leased by the state that potentially contains an embedded microchip must be identified, its model and serial number recorded and its vendor, supplier or manufacturer contacted to determine the Year 2000 impact to its operation. The logistics associated with this task are daunting: state entities must ensure that all necessary vendor contacts are made; they must track vendor responses; they must evaluate the information they receive for completeness and accuracy; and they must record and recheck the vendor responses in such a way that the information may be efficiently recalled as needed. If these activities, collectively termed “vendor management,” are not carried out efficiently, they have the potential to produce redundant efforts on the one hand and to overlook important information on the other. The state’s best hope of success lies in its ability to share and leverage information across organizations within and outside state government.

To meet this need, the DOIT has established the California Embedded Systems Center (CESC), an electronic clearinghouse facility where state entities can obtain Year 2000 compliance information about specific embedded devices. The CESC is an Internet enabled application that provides two important services:

- All users may interrogate a database for existing embedded system or vendor information;
- An authorized user may request the CESC service provider to perform the vendor management activities described above on his behalf.

The DOIT has negotiated a contract with the vendor that makes the first service available to all government entities within California including state, county and municipal government.¹² In addition, the DOIT's contract permits all state government entities to avail themselves of the vendor management services.

The value of these services cannot be underestimated. In some cases identifying the vendor currently responsible for an embedded system requires following multiple generations of corporate acquisitions beginning with an original supplier who is no longer in business. Use of experienced CESC researchers with the necessary skills has the potential to save government thousands of hours of painstaking labor. Once information about embedded systems is stored in the CESC, the information becomes instantly available statewide, potentially reducing subsequent efforts by other government entities.

The CESC database has already been augmented by data collected from the two California pilot projects. The database delivered by the vendor had no information about embedded systems used in medical facilities. The pilot conducted at the Department of Developmental Services' (DDS) Sonoma Development Center yielded information about several hundred such devices which will be input into the CESC database. The CESC database will also be updated with the facilities' vendor management from the DGS.

To date, 44 California state entities, 10 California counties, and 11 California cities have requested access to the CESC. The DOIT has also provided limited access for two weeks to the U.S. Postal Service and to three other states: Oregon, Illinois and Maryland.

California Year 2000 Embedded Systems Program Pilots

The DOIT sponsored two pilots of the Embedded Systems Year 2000 methodology. The Department of Corrections and the Department of Developmental Services participated in the pilots, which are described in the April 1998 Quarterly Report. The objectives of these pilot projects were to:

- 1) Support state entities initiating their Year 2000 embedded systems efforts by using Year 2000 best industry practices (California Year 2000 Embedded Systems Methodology);
- 2) Test the Year 2000 methodology processes and procedures in a state department environment. Refinements and lessons learned from these pilots were incorporated into the California Year 2000 Embedded Systems Program Guide;
- 3) Analyze the embedded systems data collected from the pilot facilities to identify the potential impact of the Year 2000 embedded systems problem for the State of California; and

¹² The DOIT is also receiving requests for access from other states and some private organizations.

- 4) Input the system and compliance data collected from the pilot efforts into the California Embedded Systems Center (CESC) database to enable access by other departments and state entities in their Year 2000 efforts.

All of the goals of the pilots were met. In November 1998 the DOIT will publish a generalized summary of the lessons learned so that other state organizations may benefit from the experiences of the pilot teams.

Enhancements to the California 2000 Embedded Systems Methodology

In November 1998, the DOIT will also publish two enhancements to the Embedded Systems Program Guide. These supplements address two topics of urgent importance to the project teams embarking on Year 2000 remediation of embedded systems:

- Embedded Systems Risk Analysis; and
- Embedded Systems Testing.

Many departments are struggling with the risk assessment phase of the methodology and some are bypassing it altogether. The experience of other organizations has demonstrated that shortchanging the risk assessment phase ultimately leads to rework in subsequent phases – thereby prolonging remediation activities, reducing effectiveness and increasing costs.

As with IT systems, testing of Year 2000 compliance of embedded systems consumes a significant amount of the total time and cost. In order to assist state entities in performing this important task effectively, the DOIT will publish a supplement to the Embedded Systems Program Guide in November that addresses the specific considerations related to testing these systems.

Embedded Systems Remediation Procurement

The remediation of embedded systems often requires highly specialized and, in some cases, hard to find skills that state entities cannot find within their own staff. In some cases success will depend on the ability of state entities to obtain assistance from consultants who are in high demand. To facilitate the procurement process, the DOIT is working with the Department of General Services Procurement Division (DGS-PD) to develop a simplified procurement mechanism that will enable state entities to engage consultants in both the assessment and remediation phases of the embedded systems methodology.

Department of General Services Web Site

Not only are the state's programs vulnerable to Year 2000 related failures of the embedded systems that provide direct support, they are also at risk because of Year 2000-related failures in buildings owned or leased by the state. To assist state entities in managing this risk, the DGS is developing a web page to provide Year 2000 Embedded Systems building compliance

information to state entities for those buildings owned or leased by DGS. This web site will be password protected and available only to state Year 2000 program managers.

California Leadership in Embedded Systems Remediation

California continues its leadership in the Embedded Systems arena. The DOIT's executives are frequently called upon to participate in regional and national conferences – most recently at the United States Environmental Protection Agency's Annual Hazmat (Hazardous Materials) Response Conference held in Sacramento in September concerning how Hazmat response might be impacted by the Year 2000 and embedded systems failures.

The DOIT has provided copies of its Embedded Systems Program Guide to a number of organizations, including University of California, California State University, Oregon's Department of Corrections; Cook County, Illinois; and the United States Postal Service. The program guide is also available on the DOIT's web site.

DESKTOP SYSTEMS PROGRAM

In August 1998 the DOIT established a statewide Desktop Systems Task Force. The Task Force was initially formed to work with the Department of General Services to negotiate volume discount pricing for automated desktop tools that perform Year 2000 impact assessments. The use of these tools to determine desktop Year 2000 compliance is recommended as a best practice by the IT industry, and the goal is to ensure that every state entity would receive the best purchase price available, regardless of their size. Negotiations with two vendors are in progress and it is likely that all departments will benefit from a 50-60 percent discount from the vendors' standard pricing.

The Task Force provides feedback and addresses issues related to the DOIT's monthly update reporting process for the desktop program. The DOIT has incorporated many of their recommendations into the Year 2000 desktop systems management information database and the process used by state entities to report the status of their desktop remediation efforts.

The DOIT, in conjunction with a partner department, is developing an FSR for replacement of desktop systems that support the department's mission critical functions. As a result of the collaboration among the Department of Finance and the DOIT Project Initiation and Approval division and the DOIT Network and Infrastructure division, state entities will have documented replacement criteria and an FSR that can be used for reference in the Year 2000 Desktop FSR process. It will be available on the DOIT web site in November.

YEAR 2000 OUTREACH PROGRAM

The Year 2000 problem is far reaching, touching nearly every government agency and private sector organization that employs technology worldwide. The State of California's success in meeting the Year 2000 challenge will depend on events far beyond the boundaries of state government. The DOIT continues to be committed to helping its sister government organizations within California to achieve a successful outcome to their Year 2000 remediation efforts.

Local Government Year 2000 Compliance Survey

In the third quarter of 1998 the DOIT sponsored a survey of California local governments (counties, cities and special districts) in order to measure the extent to which local governments are addressing the Year 2000 (Y2K) issue. The California Statewide Intergovernmental Year 2000 Task Force will use the survey results in its ongoing efforts to facilitate communication between the State of California and local jurisdictions and to develop mutually beneficial strategies for addressing the Year 2000 problem.

The research findings presented below were derived from a telephone survey of representatives of California's cities, counties, and special districts conducted between August 10 and August 28, 1998. The survey results will be available at the DOIT web site in November. The survey addressed the following specific areas of inquiry regarding their Year 2000 compliance plans:

- The extent to which responding entities have Year 2000 compliance plans;
- Whether there are people in charge of implementing the plans;
- The extent to which there are budgets for the plans;
- Year 2000 remediation budgets;
- Whether the plans contain strategies for making mainframe computers, minicomputers, desktop computers, and embedded systems compliant; and
- The extent to which various plan activities have been completed.

A summary of the survey findings is presented in *Table 8: Local Government Year 2000 Compliance Survey Results* below:

Local Government Year 2000 Compliance Survey Results			
Target Groups	Survey	Total Respondents	
	Population		
California cities	466	308 (66%)	
California counties	58	48 (83%)	
Special districts ¹³	150	46 (31%) ¹⁴	
		Yes	No
Year 2000 Compliance Plan in place?		73.6%	26.4%
Designated managers for Compliance Plan?		87.8%	12.2%
Designated Year 2000 Compliance Budget?		58.1%	41.9%
Expect Year 2000 Compliance by end of 3 rd Quarter, 1999?		82%	18%

Table 8: Local Government Year 2000 Compliance Survey Results

SIGNIFICANT ISSUES IDENTIFIED

1. Lack of awareness of the potential impact of embedded systems appears to be widespread. For example, when asked why no plans exist for tackling the embedded systems component of Year 2000 remediation, 38.2 percent of respondents (the biggest response) believed they did not have any, or did not use any embedded systems. This perception runs contrary to industry findings that embedded systems are widely used in automated devices and systems.
2. In the Year 2000 remediation lifecycle, testing is the last step before a system is returned to service. With respect to this ultimate test, somewhat over a third of the respondents said they had completed this step for mainframe systems (37 percent), minicomputers (35 percent), and PC's or desktops (35 percent). For embedded systems, only 14 percent of those polled said they had completed testing.
3. Contingency planning has emerged as a priority to ensure continued service, in case a Year 2000 remediation effort either fails outright or fails in part because of an unforeseen conflict. When asked to what extent contingency plans were in place, 80.9 percent of respondents said they have no contingency plans, and 18.8 percent said there was a plan in place.
4. When respondents without contingency plans were asked what they planned to do, 42.7 percent said they would do nothing, 43.1 percent said an effort would be made toward this goal, and 14.2 percent said they were not sure.

Seminar and Conference Participation

The DOIT is widely recognized for its Year 2000 knowledge and sponsorship and is frequently

¹³ A representative sampling of the 7,000 special districts in the State of California.

¹⁴ Only 46 of the 150 (31 percent) special districts targeted for representative sampling were interviewed due to difficulties in getting accurate information on contact people, location and time constraints.

asked to participate in seminars and conferences where the Year 2000 is the focus. Members of the DOIT senior staff were featured speakers at a number of symposiums and conferences held across California during the past quarter.¹⁵

¹⁵ Appendix I: The DOIT Year 2000 Seminar and Conference Participation lists the major conference and speaking engagements of the DOIT staff.

LEGAL PROGRAM

Legislative Update

The closing days of the 1997-98 legislative session saw the passage of two significant bills by Congress and the California Legislature addressing the Year 2000 problem. The “Good Samaritan” measures, S. 2393 and SB 1173, are intended to encourage the free flow of Year 2000-related information, including Year 2000 status and solutions, by providing limited legal protections for disclosures. Both measures have been signed into law and are effective immediately.

S. 2393

Congress’ S. 2393, the Year 2000 Information and Readiness Disclosure Act, is designed to encourage the prompt, candid and thorough disclosure and exchange of information related to Year 2000 readiness of entities, products and services and makes certain Year 2000 statements inadmissible in any federal or state action. While the Act addresses liability for statements made about the Year 2000 and Year 2000 readiness, it does not impact liability that may result from a Year 2000 failure.

Under the Act, a person or company would be protected from liability for negligent misrepresentations as to the status of their Year 2000 compliance. By providing a safe harbor for Year 2000 statements, Congress intended that businesses and government work together on Year 2000 solutions rather than avoid disclosure for fear that their good faith statements would be used against them later in litigation. The Act does not protect false Year 2000 statements, but the burden is on the claimant to show by clear and convincing evidence the individual made the statement knowing that it was false, inaccurate or misleading, with the intent to deceive and with a reckless disregard as to its accuracy – a high standard to meet.

The Act contains other unique provisions, such as allowing the posting of Year 2000 compliance information on an entity web site to serve as adequate legal notice in most cases. In addition, the Act contains a “grandfather” clause providing for an entity to retroactively designate as a “Year 2000 Readiness Disclosure” statements made as far back as January 1, 1996. The Act also provides a limited antitrust exemption for entities that share Year 2000 compliance information.

SB 1173

The California measure, SB 1173 (Liability: disclosure of Year 2000 information), also provides limited immunity from liability for Year 2000 solutions disseminated in good faith. The state law is more straightforward than its federal counterpart and will therefore likely result in less confusion.

Under SB 1173, a person or entity, including governmental entities, that gratuitously discloses

Year 2000 information or solutions would be immune from tort liability resulting from the disclosure of that material. False, inaccurate or misleading statements would not be protected by the state measure, but a claimant would not need to prove the clear and convincing standard of the federal law.

SB 1173, which was authored by Sen. Vasconcellos and co-authored by Sen. Kopp and Assemblymembers Alquist and Honda, became law prior to the federal measure. However, to the extent that there is any conflict with the federal Year 2000 Information and Readiness Disclosure Act, the federal measure supercedes.

ADDITIONAL YEAR 2000 CHALLENGES TO CALIFORNIA

- **Once considered a technical bug confined to mainframe computers, the Year 2000 problem is now widely recognized for its far reaching and potentially devastating consequences.**

If the computers and embedded systems that they depend on fail, businesses and individual citizens could experience power outages and disruption of telephone, gas and water delivery. Basic banking and credit services, such as funds transfers, ATM deposits and withdrawals as well as a wide range of entitlement payments such as welfare, social security and unemployment insurance could be interrupted. Distribution of medical services and necessary goods and products such as food and medicine could be delayed because of disruptions to shipping, trucking and railway transportation systems; mass transit and air travel could be interrupted; traffic lights could fail, resulting in accidents and gridlock on surface streets.

The commonly foreseen consequences of such failures range from annoying and inconsequential incidents to major societal and economic consequences. While experts' predictions differ about the magnitude of the impact to daily life and the economy, they generally are in agreement on two points:

- Preparation for the possibility of failures is essential because the actual impact of the Year 2000 will be unknown until after the fact;
- There must be an uninterrupted information flow among government, business and private citizens to enable all of them to make sensible preparations and to prevent overreactions to perceived dangers.

➤ **Preparation for failures is essential.**

Preparation consists of a range of activities that are commonly referred to by one of the following terms:

- Risk management;
- Contingency planning;
- Business continuation;
- Business resumption;
- Business continuity planning;
- Emergency response management;
- Operational recovery; and
- Disaster recovery.

While there are subtle differences in the meaning of these terms they share a common set of high level activities:

- Identify potential points of failure;
- Determine the impact of failure;
- Prevent the failure in advance; and
- Mitigate the impact after the failure has occurred.

➤ **While the state's IT organizations have responsibility for IT contingency planning, its business organizations have responsibility for business continuity planning.**

The DOIT reminds state IT organizations of their responsibilities in this area. The DOIT expects Year 2000 project managers to adhere to good project management practices including the creation and execution of IT project risk management plans.¹⁶ The State Administrative Manual (SAM) (§§ 4840-4842), instructs each department to evaluate risks and prepare a risk management plan to be invoked in the event of an IT system failure that would impair the department's ability to carry out its programs. The DOIT has instructed state entities to review their risk management plans to ensure that they accommodate eventualities unique to the Year 2000.

The Year 2000 tasks that state entities are performing as part of their Year 2000 remediation have a direct bearing on the accuracy and usefulness of contingency plans. Among the important tasks that state entities must perform are:

1. Ensuring due diligence in all remediation processes;
2. Identifying and managing external interfaces and data exchanges;
3. Evaluating the Year 2000 compliance of networks;
4. Cataloging embedded systems and desktop systems hardware and software that are susceptible to Year 2000-related failures;
5. Identifying their mission critical vendors and suppliers and evaluating the Year 2000 compliance of their products and services;
6. Testing their applications and packaged software and hardware in the current and future centuries;
7. Performing cross-organization and cross enterprise testing;
8. Implementing standards and procedures to ensure continued integrity of remediated systems; and

¹⁶ Under the auspices of the DOIT, California has created a project management methodology that addresses evaluation of project risk and the creation of a risk management plan.

9. Fostering retention of employees with key skills and subject matter expertise.

It is not difficult to see the relationship of each of these activities to contingency planning. For example, a first step in contingency planning for an external interface failure is identification of the interface and its associated IT system.

Clearly, IT organizations have an important role to plan in ensuring that the state continue to deliver its essential products and services. However, planning for and responding to the potentially momentous failures that could arise because of the Year 2000 is beyond the ability and authority of any IT organization to accomplish by itself.

➤ **Responsibility for planning can cross multiple organizations, jurisdictions and functional units.**

The impact of potential failures to California is extremely broad, conceivably affecting state government business organizations that administer essential programs and deliver necessary services, state IT organizations that support those programs and services, county and municipal government law enforcement and other local government agencies, private sector businesses and individual citizens. To completely address the risks and plan for contingencies, these entities must formulate contingency plans that are commensurate with their area of responsibility. Because the impact could be statewide, geographically localized or limited to a particular state entity or program, plans may need to be coordinated across many government and private sector functions and jurisdictions.

Information about contingency and business continuity planning is available from a number of sources in the public domain including the United States General Accounting Office, which provides advice about Year 2000 business continuity planning in its publication: Year 2000 Computing Crisis: Business Continuity and Contingency Planning. Exposure Draft. GAO/AIMD-10.1.19, available on its web site at <http://www.gao.gov/special.pubs/publist.htm>. In addition, the DOIT will shortly publish a sample contingency planning guideline. This document, developed by a Master Business Continuity Planner (MBCP) will be available for use solely within the state of California as part of the DOIT's enterprise-wide license for the *Year 2000 Executive Series* publications developed by the GIGA Information Group, an IT research and consulting firm. Focused on contingency planning for the Year 2000, the publication addresses best practices and lessons learned developed from GIGA's research with an extensive worldwide client base.

➤ **There must be an uninterrupted information flow among government, business and private citizens.**

Effective contingency planning, as well as successful invocation of those plans, depends on the ability of all affected organizations to operate as a team. Because communication both in the development and execution of the plans is crucial, the work of establishing and re-enforcing the channels of communication must begin now.

The Year 2000 problem, once the private province of technicians, is now commonplace in the

popular press and the news media. As attention to the problem grows, citizen concern, possibly apprehension, can be expected to increase as well. Escalating awareness will in turn generate increased demand for information and guidance from government. California must develop a method for providing current, coordinated, consistent responses to requests for information. To alleviate fears connected with some predictions about Year 2000 failures, the federal government will be providing an 800 number for citizen inquiry regarding the Year 2000. Expected to be operational in December or January, California and other states may refer inquiries by their own citizens to this number.

In addition, the federal government continues to take steps to ensure that necessary information is available. Public companies must consider disclosing information about their Year 2000 readiness when planning their disclosure obligations. The Securities and Exchange Commission (SEC) is publishing guidance for public companies, investment advisers, investment companies and municipal securities issuers regarding their disclosure obligations about Year 2000 issues. This guidance assists public companies in determining whether their Year 2000 issues are known material events, trends or uncertainties that should be disclosed in their disclosure documents. The SEC also addresses the need for companies to consider the Year 2000 issue in connection with other rules and regulations when they prepare financial statements.

APPENDIX A

STATE ENTITIES REPORTING YEAR 2000 IT REMEDIATION PROJECTS IN SEPTEMBER

The report on the following pages contains a list of state entities that have remediation projects in progress as of the last day of the reporting quarter. The report is in alphabetical order by state entity within agency (if applicable). The estimated Year 2000 remediation cost is shown to the right of the state entity name.

A copy of this information can be obtained by submitting a written request to the:

**Department of Information Technology
ATTN: Y2K Project Office - Quarterly Report
801 K Street Mall, Suite 2100
Sacramento, CA 95814**

APPENDIX B

STATE ENTITIES REPORTING NO FURTHER YEAR 2000 REMEDIATION OF IT SYSTEMS REQUIRED

The report on the following page contains a list of state entities that either have completed all remediation projects for their IT systems or who reported that they had IT Year 2000 remediation to perform. The report is in alphabetical order by state entity. The estimated Year 2000 remediation cost (if applicable) is shown to the right of the state entity name.

A copy of this information can be obtained by submitting a written request to the:

**Department of Information Technology
ATTN: Y2K Project Office - Quarterly Report
801 K Street Mall, Suite 2100
Sacramento, CA 95814**

APPENDIX C

STATUS OF IT MISSION CRITICAL SYSTEMS REQUIRING REMEDIATION

The following report lists mission critical systems currently being remediated as of September 30, 1998. The report is in alphabetic sequence by department within agency. The left-hand side of the report contains information about the systems themselves; the right-hand side of the report contains status information about any and all associated remediation projects.

Usually, a project will be given one of the following statuses on the report:

- “Assessment Complete” indicates that none of the planned major milestone dates have yet passed.
- “Solution Design & Planning” indicates that the next planned milestone is Solution Design and Plan; the planned milestone completion date is printed to the right of the status.
- “Development & Modification” indicates that the next planned milestone is Development and Modification; the planned milestone completion date is printed to the right of the status.
- “Testing” indicates that the next planned milestone is Testing; the planned milestone completion date is printed to the right of the status.
- “Implementation” indicates that the next planned milestone is Implementation; the planned milestone completion date is printed to the right of the status.
- “Complete” indicates that the planned project completion date has passed and the project has been flagged complete by the owning state entity.

In some circumstances a project may be assigned one of the following unusual statuses:

- “Completion Flag Not Set” indicates that the planned project completion date has passed, however the owning state entity has not yet flagged the project complete.
- “Completion Pending” indicates that all planned milestone dates (SDP, DM, Testing, IMP) have passed but the planned completion date is sometime in the future.
- “Anomaly” indicates that all project milestone dates are missing.

A copy of this information can be obtained by submitting a written request to the:

**Department of Information Technology
ATTN: Y2K Project Office - Quarterly Report
801 K Street Mall, Suite 2100
Sacramento, CA 95814**

APPENDIX D

MISSION CRITICAL SYSTEMS SCHEDULED FOR COMPLETION AFTER JANUARY 10, 1999

Based on the data provided to the DOIT as of the date of publication of this report,¹⁷ the mission critical systems listed on the following page have associated remediation projects that will not complete until after January 10, 1999. The DOIT is investigating these mission critical systems and will work with the associated state entities to determine the risk to the state's programs and develop an appropriate course of action.

A copy of this information can be obtained by submitting a written request to the:

**Department of Information Technology
ATTN: Y2K Project Office - Quarterly Report
801 K Street Mall, Suite 2100
Sacramento, CA 95814**

¹⁷ Unless otherwise stated, the data reported in this quarterly report was supplied to the DOIT on or before September 30, 1998. The data contained in Appendix D: Mission Critical Systems Scheduled for Completion after January 10, 1999 is current as of the date of publication of this document.

APPENDIX E

ADDITIONAL STATEWIDE YEAR 2000 IT STATISTICS

➤ **Statistical Summary of System Data**

Table 9: California IT Systems Status Summary below summarizes the statistical data captured as of September 30, 1998 reporting period for all systems, including mission critical systems, and for the subset of mission critical systems only.

California IT Systems Status Summary As of September 30, 1998		
	All Systems Including Mission Critical Systems	Mission Critical IT Systems Only
Total Systems	2,417	640
Total needing Year 2000 Remediation	1,272	532
Systems To be Replaced	352	119
Systems To be Modified	920	413
Total Systems Needing No Remediation	1,052	103
Systems Already Compliant	680	71
Systems No Action Needed	171	18
Systems To be Retired	201	14
Total Systems – Remediation Need Unknown	93	5
Total Systems Remediated to Date	542	220
Total Systems Explicitly Declared Complete	449	194
Replaced	106	30
Modified	343	164
Unknown Remediation Strategy	43	4
Total Systems with all Projects Complete ¹⁸	50	22
Total Lines of Code (LOC) Reported (does not include replacements)	87,121,046	68,485,819
Total Lines of Code (LOC) in Systems Needing Remediation	78,887,797	66,308,703

¹⁸ All remediation projects associated with each of the systems on this line have been designated complete by the responsible state entity; however, the systems themselves have not been declared complete. The DOIT is making an assumption that all remediation is in fact complete and is, therefore, including these systems in "Total Systems Remediated to Date." Confirmation of these assumptions is being undertaken by DOIT analysts.

California IT Systems Status Summary As of September 30, 1998		
	All Systems Including Mission Critical Systems	Mission Critical IT Systems Only
Total Lines of Code (LOC) in Systems Remediated to Date	21,386,594	16,934,278

Table 9: California IT Systems Status Detail

At the present time, the data in *Table 9* includes a few systems that are not IT systems in the conventional sense, as desktop and embedded systems and items related to networks and infrastructures have been reported in this category by some entities. However, the number of desktop and embedded systems reported in the IT data has been steadily decreasing: many entities have removed data from their IT reports that should be designated with their embedded system and desktop data.

APPENDIX F

AGENCY AND DEPARTMENT MISSION CRITICAL IT PROJECT MILESTONES SUMMARY

The charts on the following pages illustrate state entities' changing remediation project plans over the past three quarters and also present actual accomplishments. There is a summary chart for each state Agency, followed by an individual chart for each state entity reporting mission critical projects to that Agency.

The left-most group of cylindrical towers on each chart represents the total number of mission critical projects reported for each of the quarterly reporting periods in 1998. Each subsequent group of cylindrical towers represents the total number of Year 2000 project milestones planned for completion by the end of September 1998. Similar tables for state entities that do not report to agencies are included at the end of this appendix.

A copy of this information can be obtained by submitting a written request to the:

**Department of Information Technology
ATTN: Y2K Project Office - Quarterly Report
801 K Street Mall, Suite 2100
Sacramento, CA 95814**

APPENDIX G

AGENCY AND DEPARTMENT EMBEDDED SYSTEMS IDENTIFIED IN SITE SURVEY

The charts on the following pages illustrate the embedded systems data that state entities reported to the DOIT at the end of September 1998. There is a summary chart for each state Agency, followed by a table showing the total embedded systems by risk category for each state entity reporting to that Agency. Similar tables for state entities that do not report to Agencies are included at the end of this appendix.

On each chart the cylindrical towers labeled "Total Systems" represent the total number of embedded systems that pose a potential risk in each category.

A copy of this information can be obtained by submitting a written request to the:

**Department of Information Technology
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APPENDIX H

YEAR 2000 POLICY MEMORANDA PUBLISHED IN THIRD QUARTER 1998

- Year 2000: Prioritization of Mission Critical Systems Business Continuation Plans
- Year 2000 Fiscal Year 1998/1999 Appropriation
- Commencement of Discretionary Information Technology Projects

A copy of this information can be obtained by submitting a written request to the:

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APPENDIX I

THE DOIT YEAR 2000 SEMINAR AND CONFERENCE PARTICIPATION

Speaking Engagements/Conference Participation			
<i>Date</i>	<i>Location</i>	<i>Event</i>	<i>Participation</i>
July 23-24, 1998	Washington, DC	National Governor's Association Year 2000 State Summit (NASIRE) -	The Year 2000 century change and its effect on computers, embedded chips, and information systems. ¹⁹
July 29, 1998	Sacramento	Year 2000 CIO Quarterly Status Meeting	Overview of July 1998 Quarterly Report.
August 10, 1998	San Francisco	Year 2000 National Symposium Series	Keynoter; State of CA Year 2000 Project Update
August 20, 1998	San Jose	Silicon Valley Capital Club ²⁰	"Race to the Millennium: California Year 2000 Update"; Breakfast Speaker

¹⁹ The summit was designed to provide an opportunity for states to discuss public leadership roles in addressing the issues surrounding the Year 2000 date change and its effect on computers, embedded chips, and information systems. It also served as a forum for discussion with federal representatives through the President's Council on Year 2000 and representatives of local governments, regulated industry and the private sector.

²⁰ The membership includes 240 CEOs of Silicon Valley companies.

Speaking Engagements/Conference Participation (con't)			
<i>Date</i>	<i>Location</i>	<i>Event</i>	<i>Participation</i>
August 30, 1998	Sacramento	Statewide Intergovernmental Task Force Summit	Year 2000 Intergovernmental and industry issues: interfaces, telecommunications, water and power.
August 31, 1998	Sacramento	California Statewide Intergovernmental Task Force Summit	The CIO spoke on: "Year 2000 Partnerships among State, Counties and Cities" ²¹
September 9, 1998	Sacramento	Federal EPA - Annual Hazardous Materials (Hazmat) Response Workshop	Staff participated in a panel discussion on the impact of Year 2000 on Hazmat response. Senior staff assisted in coordinating this workshop.
September 10, 1998	Palo Alto	Pacific Industrial Business Association (PIBA)	Year 2000 Workshop on keeping facilities functioning. ²²

²¹ Topics also included the status of the State of California's Year 2000 remediation progress on Departments of Justice, Motor Vehicles, Transportation, Water Resources and the Health and Welfare Agency Data Center. Other Year 2000 progress updates were provided by the Federal Government on Telecommunications, Public Utilities Commission, Southwestern Bell, Governor's Office of Emergency Services, Public Employees Retirement System and the 911 System.

²² The DOIT senior staff participated on the status/implementation governmental panel along with city and county participants. The workshop focus was on topics related to keeping facilities functioning, ranging from automated monitoring and production equipment and security issues, to the availability of water, power, etc.. A specific area of focus was input on infrastructure issues – utilities, fire, police, etc. – from the DOIT's perspective.

Speaking Engagements/Conference Participation (con't)			
<i>Date</i>	<i>Location</i>	<i>Event</i>	<i>Participation</i>
September 21, 1998	Fresno	Central Valley Year 2000 Summit	The Acting Deputy Director presented: "Interfacing with Other Agencies" keynote address; Deputy Director facilitated panel moderation.
October 2, 1998	Washington, D.C	Senator Bennett's General Government Committee on Year 2000	As President of NASIRE and representing the state CIO's, Mr. Flynn testified regarding the states' general preparedness
October 7, 1998	San Jose	City of San Jose Task Force 2000	"Local Government and the Year 2000 Bug" ²³
October 15, 1998	Los Angeles	The Futurist Conference.	JTF served as one of several keynote speakers on the state's Year 2000 remediation efforts.

²³ The program was transmitted via satellite, and included defining the problem, roles of the leaders, managers, and technicians. John Koskinen, Chairman of the President's Council on the Year 2000 Conversion, was the featured speaker. A Statewide Intergovernmental Task Force Meeting was also held.

Speaking Engagements/Conference Participation (con't)			
<i>Date</i>	<i>Location</i>	<i>Event</i>	<i>Participation</i>
October 20, 1998	Tahoe City	Semi-annual California County Information Systems Directors meeting	Members of the DOIT Project Office and the Inter-governmental Task Force attended ²⁴
October 28, 1998	Chico	The State of California Rural Government Year 2000 Conference – sponsored by Senator Tim Leslie.	The CIO gave the keynote address on Governor Wilson's leadership role in coordinating state/county/city efforts on the Year 2000 problem.

²⁴ The enhanced Interface Registry made its debut at this meeting, and will be available to other jurisdictions throughout the state.

Legislative Hearings			
<i>Date</i>	<i>Location</i>	<i>Event</i>	<i>Participation</i>
August 18, 1998	Sacramento	Joint hearing: Assembly IT Committee & Senate Select Committee on Procurement, Expenditures and IT and the Senate Select Committee on Economic Development	The DOIT's quarterly report and health facilities year 2000 preparedness. ²⁵
September 8, 1998	Sacramento	Joint Hearing - Senate Select Committee on Economic Development; Select Committee on Procurement, Expenditures; and IT Assembly Committee on IT ²⁶	Year 2000: DOIT's Response to the State Auditor's Report

²⁵ Lead Legislator - Assemblymember Alquist, Senator Kopp, Senator Vasconcellos. The DOIT testified on the Year 2000 readiness to date and reported new trends to the legislature.

²⁶ Senators Vaconcellos and Kopp and Assemblywoman Alquist, Chairs.

APPENDIX J

YEAR 2000 DOCUMENTS PUBLISHED BY THE DOIT

Year 2000 Publications	Topic
<i>California Year 2000 White Paper</i>	Year 2000 overview; October, 1996.
<i>California Year 2000 Program Guide</i>	Traditional IT systems; November, 1996.
<i>California's Year 2000 Status – Year 2000 CIO Report</i>	Status of Year 2000 Program, July 15, 1997.
<i>California's Year 2000 Progress</i>	CA 2000 Quarterly Progress Report, October 15, 1997
<i>California's Year 2000 Progress</i>	CA 2000 Quarterly Progress Report, January, 1998.
<i>California's Year 2000 Progress</i>	CA 2000 Quarterly Progress Report April, 1998.
<i>California Year 2000 Embedded Systems Program Guide</i>	Embedded technology/microprocessor systems/non-IT systems, including telecommunications systems and wide area network infrastructure; June, 1998.
<i>Resolving Year 2000 Issues: Best Practices in Managing Vendors</i>	IT Practices for the Year 2000 Executive – GIGA Research Study Series; June, 1998.
<i>Resolving Year 2000 Issues: Best Practices in Testing</i>	IT Practices for the Year 2000 Executive – GIGA Research Study Series; June, 1998.
<i>California Year 2000 Desktop Systems Program Guide</i>	Microcomputers and related network infrastructure, including file servers, local area networks, and desktop computers; June, 1998.
<i>California Year 2000 External Interfaces White Paper</i>	External Interfaces coordination, synchronization and management issues; June, 1998
<i>California Year 2000 Testing White Paper</i>	Creation and execution of a Year 2000 Testing Action Plan; July, 1998.
<i>California's Year 2000 Progress</i>	CA 2000 Quarterly Progress Report, July, 1998.

Year 2000 Documents Published by the DOIT (con't)	
Year 2000 Publications	Topic
<i>California's Year 2000 Progress</i>	CA 2000 Quarterly Progress Report, October, 1998.
<i>Resolving Year 2000 Issues: End User Compliance</i>	IT Practices for the Year 2000 Executive – GIGA Research Study Series; November, 1998.
<i>Resolving Year 2000 Issues: Contingency Plans</i>	IT Practices for the Year 2000 Executive – GIGA Research Study Series; November, 1998.
<i>California Year 2000 Embedded Systems Program, Supplement 1: Risk Analysis</i>	Embedded systems: Risk Analysis Supplement; November, 1998.
<i>California Year 2000 Embedded Systems Program, Supplement 2: Testing Procedures</i>	Embedded systems: Testing Supplement. A draft of this document is currently under review; distribution is projected in November, 1998.
<i>California Year 2000 Embedded Systems Program, Supplement 3: Pilot Projects – Preliminary Assessment Reports</i>	Preliminary results from the embedded systems site surveys conducted at two pilot facilities; November, 1998.

Year 2000 Documents Published by the Intergovernmental Year 2000 Task Force	
Year 2000 Publications	Topic
<i>Local Government Year 2000 Compliance Survey</i>	Survey of California counties, cities, special districts to document their Year 2000 strategies and high level status. Distribution is projected in November, 1998.

APPENDIX K

FULL SIZE VERSIONS OF QUARTERLY REPORT GRAPHS

(as contained in the body of the report)

A copy of this information can be obtained by submitting a written request to the:

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